

Relevance of Combustion

Energy

- 85% of U.S. energy use, or 75 Quads each year, or \$400 billion each year
- Major contributor to nation's trade deficit
- Primary source for: transportation, power generation, residential and commercial heating, manufacturing and industries

Pollution

- Soot inhalation suspected in 50,000 U.S. fatalities each year
- Major contributor to global warming



Manufacturing/Industry

- Flames are used for the manufacture of:
 - Carbon black (used in pigments, tires, magnetic tapes, carbon fiber composites, etc.)
 - Industrial diamonds
 - Advanced Materials via Self-propagating, High-Temp. Synthesis

Accidents

- Forest fires
- Oil field fires
- Building fires cost thousands of lives and billions in property damage